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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,934	03/22/2004	Piotr Findeisen	200313412-1	1044
22879 7590 11/23/2007 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER ARCOS, CAROLINE H	
			ART UNIT 2195	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/805,934

Applicant(s)

FINDEISEN, PIOTR

Examiner

Caroline Arcos

Art Unit

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 03/22/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09 August 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-21 are pending for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 11-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory matter.
4. As per claims 11-21, they are not limited to tangible embodiments. In the view of applicant's disclosure, specification page 19, lines 8-10, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g. EPROM, ROM, tape, floppy disc, hard disk drive, RAM, and CD-ROMs) and intangible embodiments (e.g. transmission-type media such as digital and analog communications links). As such, the claim is not limited to statutory subject matter and is therefore non-statutory. To overcome this type of 101 rejection, the claims need to be amended to include only the physical computer media and not a transmission media or other intangible or non-functional media.

Art Unit: 2195

5. As per claim 21, the claimed apparatus are software per se, as it is not tangible embodied on any sort of physical medium. The claim recites "means", but this limitation is described as being software in the specification. Specially, it is stated at page 7, lines 9-10 and page 7, lines 13-14 of the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

7. Claims 1-10 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The claim language in the following claims is not clearly understood:

- i. As per claim1, line 7, it is not clearly understood what the selected value is, is it a predetermined fixed value or variable value.

Line 5, it is not clear whether "each elapsed time" of each thread or only one thread.

Line 7, it is not clearly understood whether "reducing to a selected value" every time there is an idle time or after the comparison with first threshold no matter if it is greater or less than the threshold.

- ii. As per claim 2, it has the same deficiency. Furthermore, line3, it is not clearly understood if the elapsed time will be reduced for the

second time.

- iii. As per claim 5, it is not clearly understood if the second threshold value change based on each thread maximum- length instruction path between execution points of the thread.
- iv. As per claim 17, it is not clearly understood if this is a method or computer readable medium claim. Since claim 17 is dependent on claim 11, which is a computer readable claim. Claim 17 should be a computer readable medium claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima et al. (Aoshima) (US 5,774,718), in view of Ballantyne (US 2002/0078121 A1).

10. As per claim 1, Aoshima teaches the invention substantially as claimed including a processor-based method for determining processor usage by a thread (Abstract, lines 1-3), comprising:

determining elapsed times between execution points of the thread based on start times and stop times associated with the execution points (Figure 6)

determining for each elapsed time whether the thread was idle during the elapsed time (figure 6) by comparison of the elapsed time to a first threshold value; (Column 2, lines 42-45).

determining a value indicative of processor usage by the thread as a function of the elapsed times (Figure 18).

11. Aoshima did not specifically teach the step to reduce the elapsed time to a selected value during which the thread was idle.

12. However, Ballantyne teaches reducing the elapsed time to a selected value during which the thread was idle (Par. [0082], lines 12-15; par. [0083], lines 4-9, where preempting the thread when the time portion expires or giving up its unused time slot, is reducing the elapsed time and thread is waiting and cannot proceed is idle time as claimed).

13. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Aoshima and Ballantyne

Art Unit: 2195

because Ballantyne's teaching of reducing the elapsed time would improve scheduling techniques and increase CPU efficiency.

14. As per claim 2, Ballantyne teaches reducing to the selected value each elapsed time during which the thread was idle comprises:

reducing to the selected value each elapsed time that exceeds a second threshold value, wherein the second threshold value is greater than the first threshold value; and

reducing to the selected value each elapsed time that exceeds the first threshold value and does not exceed the second threshold value if a condition was detected that indicates the thread was idle during each elapsed time (Par.[0082], lines 12-15; par.[0083], lines 4-9).

15. As per claim 3, Ballantyne teaches the condition comprises a processor interrupt (Par. [0049], lines 1-2; Par. [0085], lines 12, 16).

16. As per claim 4, Ballantyne teaches the condition comprises a context switch between threads of execution of a processor (Par. [0014], lines 12-13).

17. As per claim 6, Aoshima teaches the first threshold value comprises a minimum time required for an operating system kernel running the thread to execute two thread switches (Col. 4, lines 14,17; Col. 4, lines 54-59).

18. As per claim 8, Ballantyne teaches determining elapsed times comprises determining the elapsed time using a high-resolution clock. (Par. [0064], lines 5, 7; par. [0064], lines 15-16).
19. As per claim 9, Ballantyne teaches the high-resolution clock comprises a CPU clock (Par. [0064], lines 5, 7; par. [0064], lines 15-16).
20. As per claim 10, Ballantyne teaches the execution points comprise entry points and exit points of functions called by the thread (Page 43, lines 18-27).
21. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima et al. (Aoshima) (US 5,774,718), in view of Ballantyne (US 2002/0078121 A1) and further in view of Kirk (US 5,875,464).
22. As per claim 5, neither Aoshima nor Ballantyne teach determining the second threshold value based on a maximum-length instruction path between execution points of the thread.
23. However, Kirk teaches determining the second threshold value based on a maximum-length instruction path between execution points of the thread (Col. 10, lines 56-59).

24. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Aoshima, Ballantyne and Kirk because Kirk's teaching of basing the second threshold on the longest path of execution would improve CPU efficiency by determining the longest instruction path, one will be able to determine if there is some idle time, which will result on reducing the time slot given for the thread execution.

25. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima et al. (Aoshima) (US 5,774,718), in view of Ballantyne (US 2002/0078121 A1) and further in view of Xu et al. (Xu) (Dynamic instrumentation of threaded applications, ACM, 1999, Pages 49-59).

26. As per claim 7, neither Aoshima nor Ballantyne teach the threads comprise threads running in a Java virtual machine.

27. However, Xu teaches the threads comprise threads running in a Java virtual machine (Page 50, section 1, 4th paragraph, lines 4-7; page 50, subsection 3.1, 2nd paragraph, lines 9-10).

28. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Aoshima, Ballantyne and Xu because Xu 's teaching of running the threads in a Java virtual machine would improve CPU utilization and Java graphics and game applet.

29. As per claims 11-20, they are computer readable medium claims of claims 1-10 respectively. Therefore, they are rejected for the same reason as claims 1-10 above.

30. As per claim 21, it is the apparatus claim of claim 1. Therefore, it is rejected for the same reason as claim 1 above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Flautner et al. (Thread-level parallelism and interactive performance of desktop applications, ACM, 2000)

Mathis et al. (US 5,490,272) Teach method and apparatus for creating multithreaded time slices in a multitasking operating system.

Accapadi et al. (US 2005/0246461 A1) teaches scheduling threads in a multi-processor computer.

Kalafatis et al. (US 2003/0018686 A1) teaches the method and system to perform a thread switching operation within a multithreaded processor based on detection of stall condition.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caroline Arcos whose telephone number is 571-

Art Unit: 2195


270-3151. The examiner can normally be reached on Monday-Thursday 7:00 AM to 5:30 PM.

32. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

33. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent examiner

Caroline Arcos



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